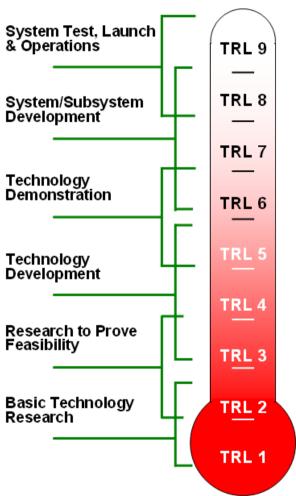IRLs

INTEROPERABILITY READINESS LEVELS

Interoperability Readiness Levels (IRLs)

Inspired by TRLs

- Nine Levels of Interoperability
  - Inspired by Technology Readiness Levels and Reuse Readiness Levels
  - Each interoperability level represents an increased ability for a system to interoperate with other systems
  - Based on four key interoperability dimensions
- Capability Enablement
  - Describes the overall capability enabled at a particular IRL
- Key Interoperability Dimensions
  - Discovery
  - Access
  - Understanding
  - Data
- 'Bonus' Interoperability Dimension
  - Standards (Individual, Organizational, Associational, National, International)
- Key Characteristics
  - Degree of human intervention required
  - Amount of custom coding vs. configuration
- Available on Google Docs – http://tinyurl.com/tiwg-irl

System Test, Launch & Operations — TRL 9

System/Subsystem Development — TRL 8, TRL 7

Technology Demonstration — TRL 6

Technology Development — TRL 5, TRL 4

Research to Prove Feasibility — TRL 3

Basic Technology Research — TRL 2, TRL 1

IRL: Capability Enablement

High IRLs
Extensive interoperability.
Little human interpretation and intervention required.
Simple configuration rather than custom coding.

Low IRLs
Little or no **interoperability**.
Significant **human** interpretation and intervention required.
Extensive custom **coding**.

	Capability Enablement
Level 9	**Automatic discovery and incorporation of novel data and services into applications with no human intervention**
Level 8	**Human-triggered incorporation of novel data and services into applications**
Level 7	**Incorporation of novel data and services into applications with minimal configuration**
Level 6	**Incorporation of novel data and services into applications with substantial configuration**
Level 5	**Incorporation of novel data and services into applications with minimal custom code**
Level 4	**Programmatic access to data services from different sources via extensive custom code**
Level 3	**Programmatic use of data from different sources via extensive custom code**
Level 2	**Human use of data from different sources using different code for each**
Level 1	**Data from different sources cannot be used together**

IRL: Capability Enablement

	Capability Enablement
Level 9	**Automatic discovery and incorporation of novel data and services into applications with no human intervention**
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Application context
- No human intervention
- Human-triggered

Application integration
- Minimal Configuration
- Substantial Configuration
- Custom coding

Enabling data usage
- Programmatic access
- Programmatic use
- Human

No interoperability

IRL Examples

IRL	Capability Enablement	Discovery	Access	Understanding	Data
8	Human-triggered incorporation of novel data and services into applications.	Services discoverable in global registries of services with complete syntactic information.	Discipline/ Domain-specific ontology support using recognized semantic tools.	Semantic agreement on content based upon community-accepted ontologies.	Standard data types in syntactically self-describing formats, quality, applicability, etc. information partly semantically captured.
3	Programmatic use of data from different sources via extensive custom code.	Catalog accessible but undocumented and changing. Manual search.	One-off specialized implementations (no standardization of API or functionality), poor documentation.	Extensive human-human interaction required to gain full meaning of data.	Data in documented formats with full content information available as free text.